

CLAIMS

1. A duplexer, comprising a transmission-side band filter and a reception-side band filter respectively constructed by connecting a plurality of surface acoustic wave resonators to form a ladder circuit, characterized in that:

the surface acoustic wave resonator includes: a  $47^\circ$  to  $58^\circ$  rotated, Y-cut, X-propagating  $\text{LiNbO}_3$  substrate and an IDT electrode formed on the  $\text{LiNbO}_3$  substrate;

that the IDT electrode includes a Ti foundation electrode layer formed on the  $\text{LiNbO}_3$  substrate and an Al electrode layer formed on the Ti foundation electrode layer; and

that a (111) face of the Al electrode layer, a (001) face or (100) face of the Ti foundation electrode layer, and a (001) face of the  $\text{LiNbO}_3$  substrate are aligned parallel.

2. The duplexer according to Claim 1, characterized in that the Ti foundation electrode layer is formed through epitaxial growth on the  $\text{LiNbO}_3$  substrate and the Al electrode layer is formed through epitaxial growth on the Ti foundation electrode layer.

3. The duplexer according to Claim 1 or 2, wherein the reception-side band filter, a first inductance is inserted in parallel with respect to at least one serial arm resonator connected to a serial arm of the ladder circuit

among the plurality of surface acoustic wave resonators, and in the transmission-side band filter, a second inductance is inserted between a parallel arm resonator connected to a parallel arm of the ladder circuit among the plurality of surface acoustic wave resonators and a ground potential.

4. The duplexer according to Claim 3, characterized in that the first inductance and the second inductance are respectively constructed by at least one of a wire bonding used for electrical connection in the duplexer, a line embedded in the duplexer, and an external coil part.

5. A communication device, comprising the duplexer according to any one of Claims 1 to 4, characterized in that the duplexer includes an antennal terminal, a third inductance is inserted between the antennal terminal and the antenna, and the duplexer further includes a capacitor connected between a connection point between the third inductance and the antennal and the ground potential.